

CERTIFICATION

SDG No: JC15518R Laboratory: Accutest, New Jersey
Site: BMSMC, Building 5 Area Matrix: Groundwater
SM04.00.06
Humacao, PR

SUMMARY: Groundwater samples (Table 1) were collected on the BMSMC facility – Building 5 area. The BMSMC facility is located in Humacao, PR. Samples were taken March 2-3, 2016 and were analyzed in Accutest Laboratory of Dayton, New Jersey that reported the data under SDG No.: JC15518R. Results were validated using the latest guidelines (July, 2015) of the EPA Hazardous Waste Support Section. The analyses performed are shown in Table 1. Individual data review worksheet for pesticides is enclosed. Organic data samples summary form shows that for analytes results that were not qualified.

In summary the results are valid and can be used for decision taking purposes.

Table 1. Samples analyzed and analysis performed

SAMPLE ID	SAMPLE DESCRIPTION	ANALYSIS PERFORMED
JC15518-1R	VP-2	PESTICIDES
JC15518-2R	VP-1	PESTICIDES
JC15518-3R	A-1R4	PESTICIDES
JC15518-4R	A-2R2	PESTICIDES
JC15518-5R	S-35	PESTICIDES
JC15518-6R	S-35D	PESTICIDES
JC15518-7R	S-34	PESTICIDES
JC15518-8R	S-33	PESTICIDES

Reviewer Name: Rafael Infante
Chemist License 1888

Signature:

Rafael Infante

Date: May 3, 2016



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Client Sample ID:	VP-2	Date Sampled:	03/02/16
Lab Sample ID:	JC15518-1R	Date Received:	03/07/16
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8081B SW846 3510C		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G32909.D	1	03/15/16	DS	03/09/16	OP91903	G6G958
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.010	0.0060	ug/l	
319-84-6	alpha-BHC	ND	0.010	0.0060	ug/l	
319-85-7	beta-BHC	ND	0.010	0.0057	ug/l	
319-86-8	delta-BHC	ND	0.010	0.0046	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.010	0.0028	ug/l	
5103-71-9	alpha-Chlordane	ND	0.010	0.0046	ug/l	
5103-74-2	gamma-Chlordane	ND	0.010	0.0046	ug/l	
60-57-1	Dieldrin	ND	0.010	0.0036	ug/l	
72-54-8	4,4'-DDD	ND	0.010	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.010	0.0062	ug/l	
50-29-3	4,4'-DDT	ND	0.010	0.0050	ug/l	
72-20-8	Endrin	ND	0.010	0.0050	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.010	0.0053	ug/l	
7421-93-4	Endrin aldehyde	ND	0.010	0.0051	ug/l	
53494-70-5	Endrin ketone	ND	0.010	0.0051	ug/l	
959-98-8	Endosulfan-I	ND	0.010	0.0050	ug/l	
33213-65-9	Endosulfan-II	ND	0.010	0.0043	ug/l	
76-44-8	Heptachlor	ND	0.010	0.0038	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.010	0.0065	ug/l	
72-43-5	Methoxychlor	ND	0.020	0.0057	ug/l	
8001-35-2	Toxaphene	ND	0.25	0.18	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		26-132%
877-09-8	Tetrachloro-m-xylene	80%		26-132%
2051-24-3	Decachlorobiphenyl	76%		10-118%
2051-24-3	Decachlorobiphenyl	88%		10-118%



ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	VP-1	Date Sampled:	03/02/16
Lab Sample ID:	JC15518-2R	Date Received:	03/07/16
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8081B SW846 3510C		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G32910.D	1	03/15/16	DS	03/09/16	OP91903	G6G958
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.010	0.0060	ug/l	
319-84-6	alpha-BHC	ND	0.010	0.0060	ug/l	
319-85-7	beta-BHC	ND	0.010	0.0057	ug/l	
319-86-8	delta-BHC	ND	0.010	0.0046	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.010	0.0028	ug/l	
5103-71-9	alpha-Chlordane	ND	0.010	0.0046	ug/l	
5103-74-2	gamma-Chlordane	ND	0.010	0.0046	ug/l	
60-57-1	Dieldrin	ND	0.010	0.0036	ug/l	
72-54-8	4,4'-DDD	ND	0.010	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.010	0.0062	ug/l	
50-29-3	4,4'-DDT	ND	0.010	0.0050	ug/l	
72-20-8	Endrin	ND	0.010	0.0050	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.010	0.0053	ug/l	
7421-93-4	Endrin aldehyde	ND	0.010	0.0051	ug/l	
53494-70-5	Endrin ketone	ND	0.010	0.0051	ug/l	
959-98-8	Endosulfan-I	ND	0.010	0.0050	ug/l	
33213-65-9	Endosulfan-II	ND	0.010	0.0043	ug/l	
76-44-8	Heptachlor	ND	0.010	0.0038	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.010	0.0065	ug/l	
72-43-5	Methoxychlor	ND	0.020	0.0057	ug/l	
8001-35-2	Toxaphene	ND	0.25	0.18	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	94%		26-132%
877-09-8	Tetrachloro-m-xylene	99%		26-132%
2051-24-3	Decachlorobiphenyl	91%		10-118%
2051-24-3	Decachlorobiphenyl	100%		10-118%



ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
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J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	A-1R4	Date Sampled:	03/02/16
Lab Sample ID:	JC15518-3R	Date Received:	03/07/16
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8081B SW846 3510C		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G32911.D	1	03/15/16	DS	03/09/16	OP91903	G6G958
Run #2							

Run #	Initial Volume	Final Volume
Run #1	900 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.011	0.0067	ug/l	
319-84-6	alpha-BHC	ND	0.011	0.0067	ug/l	
319-85-7	beta-BHC	ND	0.011	0.0063	ug/l	
319-86-8	delta-BHC	ND	0.011	0.0051	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.011	0.0031	ug/l	
5103-71-9	alpha-Chlordane	ND	0.011	0.0051	ug/l	
5103-74-2	gamma-Chlordane	ND	0.011	0.0051	ug/l	
60-57-1	Dieldrin	ND	0.011	0.0040	ug/l	
72-54-8	4,4'-DDD	ND	0.011	0.0042	ug/l	
72-55-9	4,4'-DDE	ND	0.011	0.0068	ug/l	
50-29-3	4,4'-DDT	ND	0.011	0.0055	ug/l	
72-20-8	Endrin	ND	0.011	0.0056	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.011	0.0058	ug/l	
7421-93-4	Endrin aldehyde	ND	0.011	0.0057	ug/l	
53494-70-5	Endrin ketone	ND	0.011	0.0056	ug/l	
959-98-8	Endosulfan-I	ND	0.011	0.0055	ug/l	
33213-65-9	Endosulfan-II	ND	0.011	0.0048	ug/l	
76-44-8	Heptachlor	ND	0.011	0.0042	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.011	0.0073	ug/l	
72-43-5	Methoxychlor	ND	0.022	0.0063	ug/l	
8001-35-2	Toxaphene	ND	0.28	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		26-132%
877-09-8	Tetrachloro-m-xylene	77%		26-132%
2051-24-3	Decachlorobiphenyl	41%		10-118%
2051-24-3	Decachlorobiphenyl	40%		10-118%



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Client Sample ID:	A-2R2	Date Sampled:	03/02/16
Lab Sample ID:	JC15518-4R	Date Received:	03/07/16
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8081B SW846 3510C		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G32912.D	1	03/15/16	DS	03/09/16	OP91903	G6G958
Run #2							

Run #	Initial Volume	Final Volume
Run #1	990 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.010	0.0061	ug/l	
319-84-6	alpha-BHC	ND	0.010	0.0061	ug/l	
319-85-7	beta-BHC	ND	0.010	0.0057	ug/l	
319-86-8	delta-BHC	ND	0.010	0.0046	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.010	0.0028	ug/l	
5103-71-9	alpha-Chlordane	ND	0.010	0.0047	ug/l	
5103-74-2	gamma-Chlordane	ND	0.010	0.0046	ug/l	
60-57-1	Dieldrin	ND	0.010	0.0036	ug/l	
72-54-8	4,4'-DDD	ND	0.010	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.010	0.0062	ug/l	
50-29-3	4,4'-DDT	ND	0.010	0.0050	ug/l	
72-20-8	Endrin	ND	0.010	0.0051	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.010	0.0053	ug/l	
7421-93-4	Endrin aldehyde	ND	0.010	0.0052	ug/l	
53494-70-5	Endrin ketone	ND	0.010	0.0051	ug/l	
959-98-8	Endosulfan-I	ND	0.010	0.0050	ug/l	
33213-65-9	Endosulfan-II	ND	0.010	0.0043	ug/l	
76-44-8	Heptachlor	ND	0.010	0.0038	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.010	0.0066	ug/l	
72-43-5	Methoxychlor	ND	0.020	0.0057	ug/l	
8001-35-2	Toxaphene	ND	0.25	0.19	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		26-132%
877-09-8	Tetrachloro-m-xylene	643% ^a		26-132%
2051-24-3	Decachlorobiphenyl	76%		10-118%
2051-24-3	Decachlorobiphenyl	83%		10-118%

(a) Outside control limits due to matrix interference.



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Client Sample ID:	S-35	Date Sampled:	03/03/16
Lab Sample ID:	JC15518-5R	Date Received:	03/07/16
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8081B SW846 3510C		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G32913.D	1	03/15/16	DS	03/09/16	OP91903	G6G958
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.010	0.0060	ug/l	
319-84-6	alpha-BHC	ND	0.010	0.0060	ug/l	
319-85-7	beta-BHC	ND	0.010	0.0057	ug/l	
319-86-8	delta-BHC	ND	0.010	0.0046	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.010	0.0028	ug/l	
5103-71-9	alpha-Chlordane	ND	0.010	0.0046	ug/l	
5103-74-2	gamma-Chlordane	ND	0.010	0.0046	ug/l	
60-57-1	Dieldrin	ND	0.010	0.0036	ug/l	
72-54-8	4,4'-DDD	ND	0.010	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.010	0.0062	ug/l	
50-29-3	4,4'-DDT	ND	0.010	0.0050	ug/l	
72-20-8	Endrin	ND	0.010	0.0050	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.010	0.0053	ug/l	
7421-93-4	Endrin aldehyde	ND	0.010	0.0051	ug/l	
53494-70-5	Endrin ketone	ND	0.010	0.0051	ug/l	
959-98-8	Endosulfan-I	ND	0.010	0.0050	ug/l	
33213-65-9	Endosulfan-II	ND	0.010	0.0043	ug/l	
76-44-8	Heptachlor	ND	0.010	0.0038	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.010	0.0065	ug/l	
72-43-5	Methoxychlor	ND	0.020	0.0057	ug/l	
8001-35-2	Toxaphene	ND	0.25	0.18	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	82%		26-132%
877-09-8	Tetrachloro-m-xylene	84%		26-132%
2051-24-3	Decachlorobiphenyl	54%		10-118%
2051-24-3	Decachlorobiphenyl	59%		10-118%



ND = Not detected MDL = Method Detection Limit
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 N = Indicates presumptive evidence of a compound

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Client Sample ID:	S-35D	Date Sampled:	03/03/16
Lab Sample ID:	JC15518-6R	Date Received:	03/07/16
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8081B SW846 3510C		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G32914.D	1	03/15/16	DS	03/09/16	OP91903	G6G958
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.010	0.0060	ug/l	
319-84-6	alpha-BHC	ND	0.010	0.0060	ug/l	
319-85-7	beta-BHC	ND	0.010	0.0057	ug/l	
319-86-8	delta-BHC	ND	0.010	0.0046	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.010	0.0028	ug/l	
5103-71-9	alpha-Chlordane	ND	0.010	0.0046	ug/l	
5103-74-2	gamma-Chlordane	ND	0.010	0.0046	ug/l	
60-57-1	Dieldrin	ND	0.010	0.0036	ug/l	
72-54-8	4,4'-DDD	ND	0.010	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.010	0.0062	ug/l	
50-29-3	4,4'-DDT	ND	0.010	0.0050	ug/l	
72-20-8	Endrin	ND	0.010	0.0050	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.010	0.0053	ug/l	
7421-93-4	Endrin aldehyde	ND	0.010	0.0051	ug/l	
53494-70-5	Endrin ketone	ND	0.010	0.0051	ug/l	
959-98-8	Endosulfan-I	ND	0.010	0.0050	ug/l	
33213-65-9	Endosulfan-II	ND	0.010	0.0043	ug/l	
76-44-8	Heptachlor	ND	0.010	0.0038	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.010	0.0065	ug/l	
72-43-5	Methoxychlor	ND	0.020	0.0057	ug/l	
8001-35-2	Toxaphene	ND	0.25	0.18	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	65%		26-132%
877-09-8	Tetrachloro-m-xylene	68%		26-132%
2051-24-3	Decachlorobiphenyl	52%		10-118%
2051-24-3	Decachlorobiphenyl	57%		10-118%



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J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	S-34	Date Sampled:	03/03/16
Lab Sample ID:	JC15518-7R	Date Received:	03/07/16
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8081B SW846 3510C		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G32915.D	1	03/15/16	DS	03/09/16	OP91903	G6G958
Run #2							

Run #	Initial Volume	Final Volume
Run #1	910 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.011	0.0066	ug/l	
319-84-6	alpha-BHC	ND	0.011	0.0066	ug/l	
319-85-7	beta-BHC	ND	0.011	0.0063	ug/l	
319-86-8	delta-BHC	ND	0.011	0.0050	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.011	0.0031	ug/l	
5103-71-9	alpha-Chlordane	ND	0.011	0.0051	ug/l	
5103-74-2	gamma-Chlordane	ND	0.011	0.0050	ug/l	
60-57-1	Dieldrin	ND	0.011	0.0040	ug/l	
72-54-8	4,4'-DDD	ND	0.011	0.0042	ug/l	
72-55-9	4,4'-DDE	ND	0.011	0.0068	ug/l	
50-29-3	4,4'-DDT	ND	0.011	0.0054	ug/l	
72-20-8	Endrin	ND	0.011	0.0055	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.011	0.0058	ug/l	
7421-93-4	Endrin aldehyde	ND	0.011	0.0056	ug/l	
53494-70-5	Endrin ketone	ND	0.011	0.0056	ug/l	
959-98-8	Endosulfan-I	ND	0.011	0.0055	ug/l	
33213-65-9	Endosulfan-II	ND	0.011	0.0047	ug/l	
76-44-8	Heptachlor	ND	0.011	0.0042	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.011	0.0072	ug/l	
72-43-5	Methoxychlor	ND	0.022	0.0062	ug/l	
8001-35-2	Toxaphene	ND	0.27	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	93%		26-132%
877-09-8	Tetrachloro-m-xylene	96%		26-132%
2051-24-3	Decachlorobiphenyl	76%		10-118%
2051-24-3	Decachlorobiphenyl	87%		10-118%



ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
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 N = Indicates presumptive evidence of a compound

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Client Sample ID:	S-33	Date Sampled:	03/03/16
Lab Sample ID:	JC15518-8R	Date Received:	03/07/16
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8081B SW846 3510C		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G32916.D	1	03/15/16	DS	03/09/16	OP91903	G6G958
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.011	0.0064	ug/l	
319-84-6	alpha-BHC	ND	0.011	0.0063	ug/l	
319-85-7	beta-BHC	ND	0.011	0.0060	ug/l	
319-86-8	delta-BHC	ND	0.011	0.0048	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.011	0.0029	ug/l	
5103-71-9	alpha-Chlordane	ND	0.011	0.0049	ug/l	
5103-74-2	gamma-Chlordane	ND	0.011	0.0048	ug/l	
60-57-1	Dieldrin	ND	0.011	0.0038	ug/l	
72-54-8	4,4'-DDD	ND	0.011	0.0040	ug/l	
72-55-9	4,4'-DDE	ND	0.011	0.0065	ug/l	
50-29-3	4,4'-DDT	ND	0.011	0.0052	ug/l	
72-20-8	Endrin	ND	0.011	0.0053	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.011	0.0055	ug/l	
7421-93-4	Endrin aldehyde	ND	0.011	0.0054	ug/l	
53494-70-5	Endrin ketone	ND	0.011	0.0053	ug/l	
959-98-8	Endosulfan-I	ND	0.011	0.0052	ug/l	
33213-65-9	Endosulfan-II	ND	0.011	0.0045	ug/l	
76-44-8	Heptachlor	ND	0.011	0.0040	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.011	0.0069	ug/l	
72-43-5	Methoxychlor	ND	0.021	0.0060	ug/l	
8001-35-2	Toxaphene	ND	0.26	0.19	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	91%		26-132%
877-09-8	Tetrachloro-m-xylene	85%		26-132%
2051-24-3	Decachlorobiphenyl	52%		10-118%
2051-24-3	Decachlorobiphenyl	58%		10-118%



ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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EXECUTIVE NARRATIVE

SDG No: **JC15518R** Laboratory: **Accutest, New Jersey**
Analysis: **SW846-8081B** Number of Samples: **8**
Location: **BMSMC, Building 5 Area**
Humacao, PR

SUMMARY: Eight (8) groundwater samples were analyzed for selected pesticides following method SW846-8081B. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence *Hazardous Waste Support Section SOP No. HW-36A, Revision 0, June, 2015. SOM02.2. Pesticide Data Validation.* The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

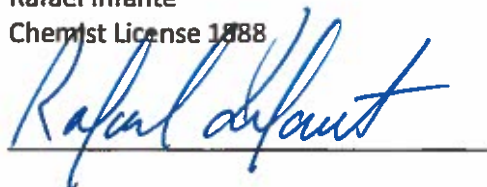
Critical issues: None
Major: None
Minor: 1. Closing calibration verification not included in data package. None of the results were qualified, professional judgment.
2. % difference in the continuing calibration verification for several analytes outside the guidelines recommended criteria. No action taken, RF % difference within the required criteria in at least one of the columns.
3. Surrogate recovery (tetrachloro-m-xylene) outside laboratory control limits in sample JC15518-4 in one of the columns. No action taken.
4. MS/MSD recoveries for several analytes outside laboratory control limits in sample JC15423-2 (QC sample). No action taken.
5. Florisil and GPC cartridge performance check data not included in data package. No action taken. No action taken.

Critical findings: None
Major findings: None
Minor findings: None

COMMENTS: Results are valid and can be used for decision making purposes.

Reviewers Name: Rafael Infante
Chemist License 1888

Signature:



Date:

April 9, 2016

SAMPLE ORGANIC DATA SAMPLE SUMMARY

Sample ID: JC15518-1R
Sample location: BMSMC Building 5 Area
Sampling date: 2-Mar-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.010	ug/L	1	-	U	Yes
alpha-BHC	0.010	ug/L	1	-	U	Yes
beta-BHC	0.010	ug/L	1	-	U	Yes
delta-BHC	0.010	ug/L	1	-	U	Yes
gamma-BHC (Lindane)	0.010	ug/L	1	-	U	Yes
alpha-Chlordane	0.010	ug/L	1	-	U	Yes
gamma-Chlordane	0.010	ug/L	1	-	U	Yes
Dieldrin	0.010	ug/L	1	-	U	Yes
4,4'-DDD	0.010	ug/L	1	-	U	Yes
4,4'-DDE	0.010	ug/L	1	-	U	Yes
4,4'-DDT	0.010	ug/L	1	-	U	Yes
Endrin	0.010	ug/L	1	-	U	Yes
Endosulfan sulfate	0.010	ug/L	1	-	U	Yes
Endrin aldehyde	0.010	ug/L	1	-	U	Yes
Endrin ketone	0.010	ug/L	1	-	U	Yes
Endosulfan-I	0.010	ug/L	1	-	U	Yes
Endosulfan-II	0.010	ug/L	1	-	U	Yes
Heptachlor	0.010	ug/L	1	-	U	Yes
Heptachlor epoxide	0.010	ug/L	1	-	U	Yes
Methoxychlor	0.020	ug/L	1	-	U	Yes
Toxaphene	0.25	ug/L	1	-	U	Yes

Sample ID: JC15518-2R
Sample location: BMSMC Building 5 Area
Sampling date: 2-Mar-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.010	ug/L	1	-	U	Yes
alpha-BHC	0.010	ug/L	1	-	U	Yes
beta-BHC	0.010	ug/L	1	-	U	Yes
delta-BHC	0.010	ug/L	1	-	U	Yes
gamma-BHC (Lindane)	0.010	ug/L	1	-	U	Yes
alpha-Chlordane	0.010	ug/L	1	-	U	Yes
gamma-Chlordane	0.010	ug/L	1	-	U	Yes
Dieldrin	0.010	ug/L	1	-	U	Yes
4,4'-DDD	0.010	ug/L	1	-	U	Yes
4,4'-DDE	0.010	ug/L	1	-	U	Yes
4,4'-DDT	0.010	ug/L	1	-	U	Yes
Endrin	0.010	ug/L	1	-	U	Yes
Endosulfan sulfate	0.010	ug/L	1	-	U	Yes
Endrin aldehyde	0.010	ug/L	1	-	U	Yes
Endrin ketone	0.010	ug/L	1	-	U	Yes
Endosulfan-I	0.010	ug/L	1	-	U	Yes
Endosulfan-II	0.010	ug/L	1	-	U	Yes
Heptachlor	0.010	ug/L	1	-	U	Yes
Heptachlor epoxide	0.010	ug/L	1	-	U	Yes
Methoxychlor	0.020	ug/L	1	-	U	Yes
Toxaphene	0.25	ug/L	1	-	U	Yes

Sample ID: JC15518-3R
Sample location: BMSMC Building 5 Area
Sampling date: 2-Mar-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.011	ug/L	1	-	U	Yes
alpha-BHC	0.011	ug/L	1	-	U	Yes
beta-BHC	0.011	ug/L	1	-	U	Yes
delta-BHC	0.011	ug/L	1	-	U	Yes
gamma-BHC (Lindane)	0.011	ug/L	1	-	U	Yes
alpha-Chlordane	0.011	ug/L	1	-	U	Yes
gamma-Chlordane	0.011	ug/L	1	-	U	Yes
Dieldrin	0.011	ug/L	1	-	U	Yes
4,4'-DDD	0.011	ug/L	1	-	U	Yes
4,4'-DDE	0.011	ug/L	1	-	U	Yes
4,4'-DDT	0.011	ug/L	1	-	U	Yes
Endrin	0.011	ug/L	1	-	U	Yes
Endosulfan sulfate	0.011	ug/L	1	-	U	Yes
Endrin aldehyde	0.011	ug/L	1	-	U	Yes
Endrin ketone	0.011	ug/L	1	-	U	Yes
Endosulfan-I	0.011	ug/L	1	-	U	Yes
Endosulfan-II	0.011	ug/L	1	-	U	Yes
Heptachlor	0.011	ug/L	1	-	U	Yes
Heptachlor epoxide	0.011	ug/L	1	-	U	Yes
Methoxychlor	0.022	ug/L	1	-	U	Yes
Toxaphene	0.28	ug/L	1	-	U	Yes

Sample ID: JC15518-4R
Sample location: BMSMC Building 5 Area
Sampling date: 2-Mar-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.010	ug/L	1	-	U	Yes
alpha-BHC	0.010	ug/L	1	-	U	Yes
beta-BHC	0.010	ug/L	1	-	U	Yes
delta-BHC	0.010	ug/L	1	-	U	Yes
gamma-BHC (Lindane)	0.010	ug/L	1	-	U	Yes
alpha-Chlordane	0.010	ug/L	1	-	U	Yes
gamma-Chlordane	0.010	ug/L	1	-	U	Yes
Dieldrin	0.010	ug/L	1	-	U	Yes
4,4'-DDD	0.010	ug/L	1	-	U	Yes
4,4'-DDE	0.010	ug/L	1	-	U	Yes
4,4'-DDT	0.010	ug/L	1	-	U	Yes
Endrin	0.010	ug/L	1	-	U	Yes
Endosulfan sulfate	0.010	ug/L	1	-	U	Yes
Endrin aldehyde	0.010	ug/L	1	-	U	Yes
Endrin ketone	0.010	ug/L	1	-	U	Yes
Endosulfan-I	0.010	ug/L	1	-	U	Yes
Endosulfan-II	0.010	ug/L	1	-	U	Yes
Heptachlor	0.010	ug/L	1	-	U	Yes
Heptachlor epoxide	0.010	ug/L	1	-	U	Yes
Methoxychlor	0.020	ug/L	1	-	U	Yes
Toxaphene	0.25	ug/L	1	-	U	Yes

Sample ID: JC15518-5R
Sample location: BMSMC Building 5 Area
Sampling date: 3-Mar-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.010	ug/L	1	-	U	Yes
alpha-BHC	0.010	ug/L	1	-	U	Yes
beta-BHC	0.010	ug/L	1	-	U	Yes
delta-BHC	0.010	ug/L	1	-	U	Yes
gamma-BHC (Lindane)	0.010	ug/L	1	-	U	Yes
alpha-Chlordane	0.010	ug/L	1	-	U	Yes
gamma-Chlordane	0.010	ug/L	1	-	U	Yes
Dieldrin	0.010	ug/L	1	-	U	Yes
4,4'-DDD	0.010	ug/L	1	-	U	Yes
4,4'-DDE	0.010	ug/L	1	-	U	Yes
4,4'-DDT	0.010	ug/L	1	-	U	Yes
Endrin	0.010	ug/L	1	-	U	Yes
Endosulfan sulfate	0.010	ug/L	1	-	U	Yes
Endrin aldehyde	0.010	ug/L	1	-	U	Yes
Endrin ketone	0.010	ug/L	1	-	U	Yes
Endosulfan-I	0.010	ug/L	1	-	U	Yes
Endosulfan-II	0.010	ug/L	1	-	U	Yes
Heptachlor	0.010	ug/L	1	-	U	Yes
Heptachlor epoxide	0.010	ug/L	1	-	U	Yes
Methoxychlor	0.020	ug/L	1	-	U	Yes
Toxaphene	0.25	ug/L	1	-	U	Yes

Sample ID: JC15518-6R
Sample location: BMSMC Building 5 Area
Sampling date: 3-Mar-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.010	ug/L	1	-	U	Yes
alpha-BHC	0.010	ug/L	1	-	U	Yes
beta-BHC	0.010	ug/L	1	-	U	Yes
delta-BHC	0.010	ug/L	1	-	U	Yes
gamma-BHC (Lindane)	0.010	ug/L	1	-	U	Yes
alpha-Chlordane	0.010	ug/L	1	-	U	Yes
gamma-Chlordane	0.010	ug/L	1	-	U	Yes
Dieldrin	0.010	ug/L	1	-	U	Yes
4,4'-DDD	0.010	ug/L	1	-	U	Yes
4,4'-DDE	0.010	ug/L	1	-	U	Yes
4,4'-DDT	0.010	ug/L	1	-	U	Yes
Endrin	0.010	ug/L	1	-	U	Yes
Endosulfan sulfate	0.010	ug/L	1	-	U	Yes
Endrin aldehyde	0.010	ug/L	1	-	U	Yes
Endrin ketone	0.010	ug/L	1	-	U	Yes
Endosulfan-I	0.010	ug/L	1	-	U	Yes
Endosulfan-II	0.010	ug/L	1	-	U	Yes
Heptachlor	0.010	ug/L	1	-	U	Yes
Heptachlor epoxide	0.010	ug/L	1	-	U	Yes
Methoxychlor	0.020	ug/L	1	-	U	Yes
Toxaphene	0.25	ug/L	1	-	U	Yes

Sample ID: JC15518-7R
Sample location: BMSMC Building 5 Area
Sampling date: 3-Mar-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.011	ug/L	1	-	U	Yes
alpha-BHC	0.011	ug/L	1	-	U	Yes
beta-BHC	0.011	ug/L	1	-	U	Yes
delta-BHC	0.011	ug/L	1	-	U	Yes
gamma-BHC (Lindane)	0.011	ug/L	1	-	U	Yes
alpha-Chlordane	0.011	ug/L	1	-	U	Yes
gamma-Chlordane	0.011	ug/L	1	-	U	Yes
Dieldrin	0.011	ug/L	1	-	U	Yes
4,4'-DDD	0.011	ug/L	1	-	U	Yes
4,4'-DDE	0.011	ug/L	1	-	U	Yes
4,4'-DDT	0.011	ug/L	1	-	U	Yes
Endrin	0.011	ug/L	1	-	U	Yes
Endosulfan sulfate	0.011	ug/L	1	-	U	Yes
Endrin aldehyde	0.011	ug/L	1	-	U	Yes
Endrin ketone	0.011	ug/L	1	-	U	Yes
Endosulfan-I	0.011	ug/L	1	-	U	Yes
Endosulfan-II	0.011	ug/L	1	-	U	Yes
Heptachlor	0.011	ug/L	1	-	U	Yes
Heptachlor epoxide	0.011	ug/L	1	-	U	Yes
Methoxychlor	0.022	ug/L	1	-	U	Yes
Toxaphene	0.27	ug/L	1	-	U	Yes

Sample ID: JC15518-8R
Sample location: BMSMC Building 5 Area
Sampling date: 3-Mar-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.011	ug/L	1	-	U	Yes
alpha-BHC	0.011	ug/L	1	-	U	Yes
beta-BHC	0.011	ug/L	1	-	U	Yes
delta-BHC	0.011	ug/L	1	-	U	Yes
gamma-BHC (Lindane)	0.011	ug/L	1	-	U	Yes
alpha-Chlordane	0.011	ug/L	1	-	U	Yes
gamma-Chlordane	0.011	ug/L	1	-	U	Yes
Dieldrin	0.011	ug/L	1	-	U	Yes
4,4'-DDD	0.011	ug/L	1	-	U	Yes
4,4'-DDE	0.011	ug/L	1	-	U	Yes
4,4'-DDT	0.011	ug/L	1	-	U	Yes
Endrin	0.011	ug/L	1	-	U	Yes
Endosulfan sulfate	0.011	ug/L	1	-	U	Yes
Endrin aldehyde	0.011	ug/L	1	-	U	Yes
Endrin ketone	0.011	ug/L	1	-	U	Yes
Endosulfan-I	0.011	ug/L	1	-	U	Yes
Endosulfan-II	0.011	ug/L	1	-	U	Yes
Heptachlor	0.011	ug/L	1	-	U	Yes
Heptachlor epoxide	0.011	ug/L	1	-	U	Yes
Methoxychlor	0.021	ug/L	1	-	U	Yes
Toxaphene	0.026	ug/L	1	-	U	Yes

DATA REVIEW WORKSHEETS

Project/Case Number: JC15518
 Sampling Date: March 02-03, 2016
 Shipping Date: March 03, 2016
 EPA Region No.: 2

REVIEW OF PESTICIDE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence *Hazardous Waste Support Section SOP No. HW-36A, Revision 0, June, 2015. SOM02.2. Pesticide Data Validation*. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) Accutest data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: JC15518 Sample matrix: Groundwater
 No. of Samples: 8
 Trip blank No.: -
 Field blank No.: -
 Equipment blank No.: -
 Field duplicate No.: JC15518-5/-6 (S-35/S-35D)
 Field spikes No.: -
 QC audit samples: -

<input checked="" type="checkbox"/> Data Completeness	<input checked="" type="checkbox"/> Laboratory Control Spikes
<input checked="" type="checkbox"/> Holding Times	<input checked="" type="checkbox"/> Field Duplicates
<input type="checkbox"/> N/A GC/MS Tuning	<input checked="" type="checkbox"/> Calibrations
<input checked="" type="checkbox"/> Internal Standard Performance	<input checked="" type="checkbox"/> Compound Identifications
<input checked="" type="checkbox"/> Blanks	<input checked="" type="checkbox"/> Compound Quantitation
<input checked="" type="checkbox"/> Surrogate Recoveries	<input checked="" type="checkbox"/> Quantitation Limits
<input checked="" type="checkbox"/> Matrix Spike/Matrix Spike Duplicate	

Overall Comments: Selected pesticides by SW846-8081B (TCL list)

Definition of Qualifiers:

J- Estimated results
 U- Compound not detected
 R- Rejected data
 UJ- Estimated nondetect

Reviewer: Rafael Infante
 Date: May 3, 2016

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION

DATE LAB. CONTACTED

DATE RECEIVED

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE EXTRACTED/ANALYZED	ACTION

Preservatives: All samples extracted and analyzed within the required criteria.

Criteria

Aqueous samples - seven (7) days from sample collection for extraction; 40 days from sample collection for analysis.

Non-aqueous samples – fourteen (14) days from sample collection for extraction; 40 days from sample collection for analysis.

Cooler temperature (Criteria: 4 ± 2 °C): 2.6°C - OK

Actions

Qualify aqueous sample results using preservation and technical holding time information as follows:

- If there is no evidence that the samples were properly preserved ($T = 4^{\circ}\text{C} \pm 2^{\circ}\text{C}$), and the samples were extracted or analyzed within the technical holding times, qualify detects as estimated (J) and non-detects as estimated (UJ).
- If there is no evidence that the samples were properly preserved ($T = 4^{\circ}\text{C} \pm 2^{\circ}\text{C}$), and the samples were extracted or analyzed outside the technical holding times, qualify detects as estimated (J) and non-detects as estimated (UJ).
- If the samples were properly preserved, and were extracted and analyzed within the technical holding times, no qualification of the data is necessary.
- If the samples were properly preserved, and were extracted or analyzed outside the technical holding times, qualify detects as estimated (J) and non-detects as estimated (UJ). Note in the Data Review Narrative that holding times were exceeded and the effect of exceeding the holding time on the resulting data.

DATA REVIEW WORKSHEETS

- e. Use professional judgment to qualify samples whose temperature upon receipt at the laboratory is either below 2 degrees centigrade or above 6 degrees centigrade.
- f. If technical holding times are grossly exceeded, use professional judgment to qualify the data.

Qualify non-aqueous sample results using preservation and technical holding time information as follows:

- a. If there is no evidence that the samples were properly preserved ($T = 4^{\circ}\text{C} \pm 2^{\circ}\text{C}$), and the samples were extracted or analyzed within the technical holding time, qualify detects as estimated (J) and non-detects as estimated (UJ).
- b. If there is no evidence that the samples were properly preserved ($T = 4^{\circ}\text{C} \pm 2^{\circ}\text{C}$), and the samples were extracted or analyzed outside the technical holding time, qualify detects as estimated (J) and non-detects as estimated (UJ).
- c. If the samples were properly preserved, and were extracted and analyzed within the technical holding time, no qualification of the data is necessary.
- d. If the samples were properly preserved, and were extracted or analyzed outside the technical holding time, qualify detects as estimated (J) and non-detects as estimated (UJ). Note in the Data Review Narrative that holding times were exceeded and the effect of exceeding the holding time on the resulting data.
- e. Use professional judgment to qualify samples whose temperature upon receipt at the laboratory is either below 2 degrees centigrade or above 6 degrees centigrade.
- f. If technical holding times are grossly exceeded, use professional judgment to qualify the data.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met see below

GAS CHROMATOGRAPH WITH ELECTRON CAPTURE DETECTOR (GC/ECD) INSTRUMENT PERFORMANCE CHECK (SECTIONS 1 TO 5)

1. Resolution Check Mixture

Criteria

Is the resolution between two adjacent peaks in the Resolution Check Mixture C greater than or equal to 80.0% for all analytes for the primary column and greater than or equal to 50.0% for the confirmation column?
Yes? or No?

Is the resolution between two adjacent peaks in the Resolution Check Mixture (A and B) greater than or equal to 60.0%?
Yes? or No?

Note: If resolution criteria are not met, the quantitative results may not be accurate due to inadequate resolution. Qualitative identifications may also be questionable if coelution exists.

Action

- a. Qualify detects for target compounds that were not adequately resolved as tentatively identified (NJ).
- b. Qualify non-detected compounds as unusable (R).

2. Performance Evaluation Mixture (PEM) Resolution Criteria

Criteria

Is PEM analysis performed at the required frequency (at the end of each pesticide initial calibration sequence and every 12 hours)?
Yes? or No?

Action

- a. If PEM is not performed at the required frequency, qualify all associated sample and blank results as unusable (R).

Criteria

Is PEM % Resolution < 90%?
Yes? or No?

Action

- a. a. Qualify detects for target compounds that were not adequately resolved as tentatively identified (NJ).
- b. Qualify non-detected compounds as unusable (R).

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met see below

3. PEM 4,4'-DDT Breakdown

Criteria

Is the PEM 4,4'-DDT % Breakdown >20.0% and 4,4'-DDT is detected? Yes? or No?

Action

a. Qualify detects for 4,4'-DDT; detects for 4,4'-DDD; and detects for 4,4'-DDE as estimated (J)

Criteria

Is the PEM 4,4'-DDT % Breakdown >20.0% and 4,4'-DDT is not detected Yes? or No?

Action

- a. Qualify non-detects for 4,4'- DDT as unusable (R)
- b. Qualify detects for 4,4'-DDD as tentatively identified (NJ)
- c. Qualify detects for 4,4'-DDE as tentatively identified (NJ)

4. PEM Endrin Breakdown

Criteria

Is the PEM Endrin % Breakdown >20.0% and Endrin is detected? Yes? or No?

Action

a. Qualify detects for Endrin; detects for Endrin aldehyde; and detects for Endrin ketone as estimated (J)

Criteria

Is the PEM Endrin % Breakdown >20.0% and Endrin is not detected Yes? or No?

Action

- a. Qualify non-detects for Endrin as unusable (R)
- b. Qualify detects for Endrin aldehyde as tentatively identified (NJ)
- c. Qualify detects for Endrin ketone as tentatively identified (NJ)

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met see below

5. Mid-point Individual Standard Mixture Resolution -

Criteria

Is the resolution between two adjacent peaks in the Resolution Check Mixture C greater than or equal to 80.0% for all analytes for the primary column and greater than or equal to 50.0% for the confirmation column? Yes? or No?

Is the resolution between two adjacent peaks in the Resolution Check Mixture (A and B) greater than or equal to 90.0%? Yes? or No?

Note: If resolution criteria are not met, the quantitative results may not be accurate due to inadequate resolution. Qualitative identifications may also be questionable if coelution exists.

Action

- a. Qualify detects for target compounds that were not adequately resolved as tentatively identified (NJ).
- b. Qualify non-detected compounds as unusable (R).

Criteria

Is mid-point individual standard mixture analysis performed at the required frequency (every 12 hours)? Yes? or No?

Action

- a. If the mid-point individual standard mixture analysis is not performed at the required frequency, qualify all associated sample and blank results as unusable (R).

DATA REVIEW WORKSHEETS

All criteria were met _____
 Criteria were not met _____
 and/or see below X

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration: 02/25/16 03/15/16
 Dates of continuing calibration: 02/25/16 (initial); 03/14/16 03/15/16 (initial); 03/16/16
 Instrument ID numbers: GC4G GC4G
 Matrix/Level: Aqueous/low Aqueous/low

Date of initial calibration: 03/25/16
 Dates of continuing calibration: 03/15/16 (initial); 03/15/16
 Instrument ID numbers: G1530A
 Matrix/Level: Aqueous/low

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
See enclosed list.					

Note: All samples analyzed meet the method performance criteria in at least one of the columns for initial and continuing calibration verification. No final calibration verification analyzed. No action was taken professional judgment.

Criteria

Are a five point calibration curve delivered with concentration levels as shown in Table 3 of SOP HW-36A, Revision 0, June, 2015? Yes? or No?

Actions

If the standard concentrations listed in Table 3 are not used, use professional judgment to evaluate the effect on the data

Criteria

Are RT Windows calculated correctly? Yes? or No?

Action

Recalculate the windows and use the corrected values for all evaluations.

CONTINUING CALIBRATION VERIFICATION

INSTRUMENT: GC4G

DATE: 03/14/2016

FILE ID: cc1719-25

Compound	AvgRF	CCRF	%Dev
1 I 1-bromo-2-nitrobenzene	1.000	1.000	0.0 77
2 SAB Tetrachloro-m-xylene	0.906	1.144	-26.3#
3 A alpha-BHC	1.216	1.581	-30.0#
4 MA gamma-BHC	1.099	1.421	-29.3#
5 MA Heptachlor	0.992	1.311	-32.2#
7 B delta-BHC	0.792	1.252	-58.1#
8 MB Aldrin	1.125	1.409	-25.2#
9 B Heptachlor Epoxide	0.998	1.297	-30.0#
10 B gamma-Chlordane	0.936	1.248	-33.3#
11 B alpha-Chlordane	1.023	1.243	-21.5#
12 A Endosulfan I	1.016	1.307	-28.6#
13 B 4,4'-DDE	0.825	1.080	-30.9#
14 MA Dieldrin	0.980	1.275	-30.1#
15 MA Endrin	0.895	1.173	-31.1#
16 A 4,4'-DDD	0.741	1.030	-39.0#
17 B Endosulfan II	0.887	1.142	-28.7#
19 B Endrin Aldehyde	0.704	0.943	-33.9#
20 B Endosulfan Sulfate	0.735	0.977	-32.9#
21 A Methoxychlor	0.241	0.341	-41.5#
22 Mirex	0.722	0.950	-31.6#
23 B Endrin Ketone	0.792	1.058	-33.6#
24 SA Decachlorobiphenyl	0.932	1.145	-22.9#

***** Signal #2 *****

Compound	AvgRF	CCRF	%Dev
23 B Endrin Ketone	0.899	1.087	-20.9#

Note: Qualify Endrin ketone results (J) for affected samples. Results for the other analytes reported from column that meet response factor percent difference (%D) criteria.

INSTRUMENT: GC4G

DATE: 03/14/2016

FILE ID: cc1719-50

Compound	AvgRF	CCRF	%Dev
3 A alpha-BHC	1.216	1.495	-22.9#
5 MA Heptachlor	0.992	1.310	-32.1#
7 B delta-BHC	0.792	1.197	-51.1#
10 B gamma-Chlordane	0.936	1.182	-26.3#
12 A Endosulfan I	1.016	1.250	-23.0#
14 MA Dieldrin	0.980	1.195	-21.9#
16 A 4,4'-DDD	0.741	0.903	-21.9#
17 B Endosulfan II	0.887	1.067	-20.3#
19 B Endrin Aldehyde	0.704	0.867	-23.2#
20 B Endosulfan Sulfate	0.735	0.910	-23.8#
21 A Methoxychlor	0.241	0.327	-35.7#
23 B Endrin Ketone	0.792	1.037	-30.9#

INSTRUMENT: GC4G
 DATE: 03/14/2016
 FILE ID: cc1719-50

***** Signal #2 *****

Compound	AvgRF	CCRF	%Dev
3 A alpha-BHC	1.267	1.543	-21.8#
4 MA gamma-BHC	1.120	1.383	-23.5#
7 B delta-BHC	1.055	1.314	-24.5#
23 B Endrin Ketone	0.899	1.144	-27.3#

Note: Qualify alpha-BHC, gamma-BHC, delta-BHC, and Endrin ketone results (J) for affected samples. Results for the other analytes reported from column that meet response factor percent difference (%D) criteria.

INSTRUMENT: GC4G
 DATE: 03/14/2016
 FILE ID: cc1719-25

Compound	AvgRF	CCRF	%Dev
5 MA Heptachlor	0.992	1.269	-27.9#
7 B delta-BHC	0.792	1.189	-50.1#
21 A Methoxychlor	0.241	0.303	-25.7#
23 B Endrin Ketone	0.792	0.962	-21.5#

***** Signal #2 *****

Compound	AvgRF	CCRF	%Dev
4 MA gamma-BHC	1.120	1.349	-20.4#
7 B delta-BHC	1.055	1.268	-20.2#

Note: Qualify delta-BHC results (J) for affected samples. Results for the other analytes reported from column that meet response factor percent difference (%D) criteria.

INSTRUMENT: GC4G
 DATE: 03/16/2016
 FILE ID: cc1736-25

	True	Calc.	% Drift
18 MA 4,4'-DDT	25.000	31.756	-27.0#

Compound	AvgRF	CCRF	%Dev
20 B Endosulfan Sulfate	0.776	0.935	-20.5#
21 A Methoxychlor	0.313	0.415	-32.6#

Note: No action taken, results reported from column that meet response factor percent difference (%D) criteria.

INSTRUMENT: GC4G
DATE: 03/16/2016
FILE ID: cc1736-50

Compound	AvgRF	CCRF	%Dev
4 MA gamma-BHC	1.167	1.407	-20.6#
5 MA Heptachlor	1.129	1.385	-22.7#
7 B delta-BHC	1.122	1.404	-25.1#
13 B 4,4'-DDE	0.863	1.071	-24.1#
19 B Endrin Aldehyde	0.753	0.905	-20.2#
20 B Endosulfan Sulfate	0.776	0.995	-28.2#
21 A Methoxychlor	0.313	0.446	-42.5#
22 Mirex	0.772	0.930	-20.5#
23 B Endrin Ketone	0.892	1.086	-21.7#

***** Signal #2 *****

Compound	AvgRF	CCRF	%Dev
7 B delta-BHC	1.062	1.319	-24.2#
21 A Methoxychlor	0.351	0.487	-38.7#
23 B Endrin Ketone	0.911	1.129	-23.9#

Note: Qualify delta-BHC, Methoxychlor, and Endrin ketone results (J) for affected samples. Results for the other analytes reported from column that meet response factor percent difference (%D) criteria.

INSTRUMENT: G1530A
DATE: 03/15/2016
FILE ID: cc957-25

Compound	AvgRF	CCRF	%Dev
22 Mirex	1.002	1.224	-22.2#
23 B Endrin Ketone	1.142	1.396	-22.2#

***** Signal #2 *****

Compound	AvgRF	CCRF	%Dev
19 B Endrin Aldehyde	0.667	0.807	-21.0#
22 Mirex	0.709	0.852	-20.2#

Note: No action taken, professional judgment.

DATA REVIEW WORKSHEETS

Criteria

Are the Percent Relative Standard Deviation (%RSD) of the CFs for each of the single component target compounds less than or equal to 20.0%, except for alpha-BHC and delta-BHC?

Yes? or No?

Are the %RSD of the CFs for alpha-BHC and delta-BHC less than or equal to 25.0%. Yes? or No?

Is the %RSD of the CFs for each of the Toxaphene peaks must be < 30% when 5-point ICAL is performed?

Yes? or No?

Is the %RSD of the CFs for the two surrogates (tetrachloro-m-xylene and decachlorobiphenyl) less than or equal to 30.0%.

Yes? or No?

Action

a. If the %RSD criteria are not met, qualify detects as estimated (J) and use professional judgment to qualify non-detected target compounds.

b. If the %RSD criteria are within allowable limits, no qualification of the data is necessary

Continuing Calibration Checks

Criteria

Is the continuing calibration standard analyzed at the acceptable time intervals? Yes? or No?

Action

a. If more than 14 hours has elapsed from the injection of the instrument blank that begins an analytical sequence (opening CCV) and the injection of either a PEM or mid-point concentration of the Individual Standard Mixtures (A and B) or (C), qualify all data as unusable (R).

b. If more than 12 hours has elapsed from the injection of the instrument blank that begins an analytical sequence (opening CCV) and the injection of the last sample or blank that is part of the same analytical sequence, qualify all data as unusable (R).

c. If more than 72 hours has elapsed from the injection of the sample with a Toxaphene detection and the Toxaphene Calibration Verification Standard (CS3), qualify all data as unusable (R).

Criteria

Is the Percent Difference (%D) within $\pm 25.0\%$ for the PEM sample?

Yes? or No?

Action

a. Qualify associated detects as estimated (J) and non-detects as estimated (UJ).

DATA REVIEW WORKSHEETS

All criteria were met _____
Criteria were not met
and/or see below _____

Criteria

For the Calibration Verification Standard (CS3); is the Percent Difference (%D) within $\pm 25.0\%$?
Yes? or No?

Action

Qualify associated detects as estimated (J) and non-detects as estimated (UJ).

Criteria

Is the PEM 4,4'-DDT % Breakdown $>20.0\%$ and 4,4'-DDT is detected? Yes? or No?

Action

- a. Qualify detects for 4,4'-DDT; detects for 4,4'-DDD; and detects for 4,4'-DDE as estimated (J)
- b. Non-detected associated compounds are not qualified

Criteria

Is the PEM 4,4'-DDT % Breakdown $>20.0\%$ and 4,4'-DDT is not detected Yes? or No?

Action

- a. Qualify non-detects for 4,4'- DDT as unusable (R)
- b. Qualify detects for 4,4'-DDD as tentatively identified (NJ)
- c. Qualify detects for 4,4'-DDE as tentatively identified (NJ)

Criteria

Is the PEM Endrin % Breakdown $>20.0\%$ and Endrin is detected? Yes? or No?

Action

- a. Qualify detects for Endrin; detects for Endrin aldehyde; and detects for Endrin ketone as estimated (J)
- b. Non-detected associated compounds are not qualified

Criteria

Is the PEM Endrin % Breakdown $>20.0\%$ and Endrin is not detected Yes? or No?

DATA REVIEW WORKSHEETS

Action

- a. Qualify non-detects for Endrin as unusable (R)
- b. Qualify detects for Endrin aldehyde as tentatively identified (NJ)
- c. Qualify detects for Endrin ketone as tentatively identified (NJ)

A separate worksheet should be filled for each initial curve

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below _____

BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

CRQL concentration N/A

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_No target analytes detected in method blanks at a reporting limit of 0.01 and 0.001 ug/L.				

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_No field/equipment/trip blank analyzed with this data package.				

DATA REVIEW WORKSHEETS

All criteria were met ☒
 Criteria were not met
 and/or see below _____

BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

The concentration of non-target compounds in all blanks must be less than or equal to 10 µg/L. The concentration of each target compound found in the method or field blanks must be less than its CRQL listed in the method.

Data concerning the field blanks are not evaluated as part of the CCS process. If field blanks are present, the data reviewer should evaluate this data in a similar fashion as the method blanks.

Specific actions are as follows:

Blank Actions for Pesticide Analyses

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Sulfur Cleanup, Instrument, Field, TCLP/SPLP	Detects	Not detected	No qualification required
	< CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification required
	> CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL and ≤ blank concentration	Report blank value for sample concentration with a U
		≥ CRQL and > blank concentration	No qualification required
	= CRQL	≤ CRQL	Report CRQL value with a U
		> CRQL	No qualification required
	Gross contamination	Detects	Report blank value for sample concentration with a U

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

[illegible]

DATA REVIEW WORKSHEETS

All criteria were met _____
 Criteria were not met _____
 and/or see below X

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: Groundwater

SAMPLE ID	SURROGATE COMPOUND		ACTION
	Tetrachloro-m-xylene	Decachlorobiphenyl	
<u>JC15518-4R (signal #2)</u>	<u>643</u>		<u>No action</u>

QC Limits

LL to UL 26 to 132 to

Actions:

- For any surrogate recovery greater than 150%, qualify detected target compounds as biased high (J+).
- Do not qualify non-detected target compounds for surrogate recovery > 150 %.
- If both surrogate recoveries are greater than or equal to 30% and less than or equal to 150%, no qualification of the data is necessary.
- For any surrogate recovery greater than or equal to 10% and less than 30%, qualify detected target compounds as biased low (J-).
- For any surrogate recovery greater than or equal to 10% and less than 30%, qualify non-detected target compounds as approximated (UJ).
- If low surrogate recoveries are from sample dilution, professional judgment should be used to determine if the resulting data should be qualified. If sample dilution is not a factor:
 - Qualify detected target compounds as biased low (J-).
 - Qualify non-detected target compounds as unusable (R).
- If surrogate RTs in PEMs, Individual Standard Mixtures, samples, and blanks are outside of the RT Windows, the reviewer must use professional judgment to qualify data.
- If surrogate RTs are within RT windows, no qualification of the data is necessary.
- If the two surrogates were not added to all samples, MS/MSDs, standards, LCSs, and blanks, use professional judgment in qualifying data as missing surrogate analyte may not directly apply to target analytes.

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

Summary Surrogate Actions for Pesticide Analyses

Criteria	Action*	
	Detected Target Compounds	Non-detected Target Compounds
%R > 150%	J+	No qualification
30% < %R < 150%	No qualification	
10% < %R < 30%	J-	UJ
%R < 10% (sample dilution not a factor)	J-	R
%R < 10% (sample dilution is a factor)	Use professional judgment	
RT out of RT window	Use professional judgment	
RT within RT window	No qualification	

* Use professional judgment in qualifying data, as surrogate recovery problems may not directly apply to target analytes.

DATA REVIEW WORKSHEETS

All criteria were met _____
 Criteria were not met _____
 and/or see below X

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

Data for MS and MSDs will not be present unless requested by the Region.
 Notify the Contract Laboratory Program Project Officer (CLP PO) if a field blank was used for the MS and MSD, unless designated as such by the Region.

NOTE: For a Matrix Spike that does not meet criteria, apply the action to only the field sample used to prepare the Matrix Spike sample. If it is clearly stated in the data validation materials that the samples were taken through incremental sampling or some other method guaranteeing the homogeneity of the sample group, then the entire sample group may be qualified.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID: JC15423-2

Matrix/Level: Groundwater/low

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
<u>See attached list.</u>					

Action

No qualification of the data is necessary on MS and MSD data alone. However, using professional judgment, the validator may use the MS and MSD results in conjunction with other QC criteria and determine the need for some qualification of the data.

A separate worksheet should be used for each MS/MSD pair.

JC15518-1R, JC15518-2R, JC15518-3R, JC15518-4R, JC15518-5R, JC15518-6R, JC15518-7R, JC15518-8R

CAS No.	Compound	JC15423-2 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
319-84-6	alpha-BHC	0.064	0.52	0.81	143* a	0.52	0.87	155	7	37-164/37
319-86-8	delta-BHC	0.38	0.52	1.5	215* b	0.52	1.5	215* b	0	32-168/36
5103-74-2	gamma-Chlordane	ND	0.52	1.5	720* a	0.52	1.7	326* a	13	39-157/37
72-54-8	4,4'-DDD	7.1 c	0.52	8.4	250* b	0.52	10	557* b	17	40-161/36
72-55-9	4,4'-DDE	35.4 c	0.52	52.7	2938* b	0.52	61.6	4646* b	16	34-158/36
72-20-8	Endrin	ND	0.52	0.82	157	0.52	0.84	161* a	2	44-166/35
1031-07-8	Endosulfan sulfate	ND	0.52	0.87	167* a	0.52	0.80	154	8	46-161/36
53494-70-5	Endrin ketone	ND	0.52	0.87	167	0.52	0.99	190* a	13	44-157/36
1024-57-3	Heptachlor epoxide	ND	0.52	0.65	-374* b	0.52	0.67	-371* b	3	45-154/37
8001-35-2	Toxaphene	ND		ND			ND		nc	50-150/30

CAS No.	Surrogate Recoveries	MS	MSD	JC15423-2	JC15423-2	Limits
877-09-8	Tetrachloro-m-xylene	95%	112%	45%	0%* d	26-132%
877-09-8	Tetrachloro-m-xylene	100%	115%	83%	0%* d	26-132%
2051-24-3	Decachlorobiphenyl	52%	57%	29%	0%* d	10-118%
2051-24-3	Decachlorobiphenyl	49%	56%	32%	0%* d	10-118%

(a) Outside control limits due to matrix interference.

(b) Outside control limits due to high level in sample relative to spike amount.

(c) Result is from Run #2.

(d) Outside control limits due to dilution.

Note: No action taken, professional judgment.

DATA REVIEW WORKSHEETS

All criteria were met ☒
 Criteria were not met ☐
 and/or see below ☐

LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

LCS Spike Compound	Recovery Limits (%)
gamma-BHC	50 – 120
Heptachlor epoxide	50 – 150
Dieldrin	30 – 130
4,4'-DDE	50 – 150
Endrin	50 – 120
Endosulfan sulfate	50 – 120
trans-Chlordane	30 – 130
Tetrachloro-m-xylene (surrogate)	30 – 150
Decachlorobiphenyl (surrogate)	30 – 150

LCS concentrations: 0.25 ug/L

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
OP91903-BS1	Endosulfan_sulfate	124 ^a	49 - 148

(a) Reported from 2nd signal. %D of check calibration on 1st signal exceeds method criteria (20%), used for confirmation only.

Action

The following guidance is suggested for qualifying sample data for which the associated LCS does not meet the required criteria.

- If the LCS recovery exceeds the upper acceptance limit, qualify detected target compounds as estimated (J). Do not qualify non-detected target compounds.
- If the LCS recovery is less than the lower acceptance limit, qualify detected target compounds as estimated (J) and non-detects as unusable (R).
- Use professional judgment to qualify data for compounds other than those compounds that are included in the LCS.
- Use professional judgment to qualify non-LCS compounds. Take into account the compound class, compound recovery efficiency, analytical problems associated with each compound, and comparability in the performance of the LCS compound to the non-LCS compound.
- If the LCS recovery is within allowable limits, no qualification of the data is necessary.

DATA REVIEW WORKSHEETS

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

DATA REVIEW WORKSHEETS

All criteria were met _____
Criteria were not met _____
and/or see below ___N/A___

FLORISIL CARTRIDGE PERFORMANCE CHECK

NOTE: Florisil cartridge cleanup is mandatory for all extracts.

Criteria

Is the Florisil cartridge performance check conducted at least once on each lot of cartridges used for sample cleanup or every 6 months, whichever is most frequent? Yes? or No? **N/A**

Criteria

Are the results for the Florisil Cartridge Performance Check solution included with the data package? Yes? or No? **N/A**

Note: If % criteria are not met, examine the raw data for the presence of polar interferences and use professional judgment in qualifying the data as follows:

Action:

- a. If the Percent Recovery is greater than 120% for any of the pesticide target compounds in the Florisil Cartridge Performance Check, qualify detected compounds as estimated (J). Do not qualify non-detected target compounds.
- b. If the Percent Recovery is greater than or equal to 80% and less than or equal to 120% for all the pesticide target compounds, no qualification of the data is necessary.
- c. If the Percent Recovery is greater than or equal to 10% and less than 80% for any of the pesticide target compounds in the Florisil Cartridge Performance Check, qualify detected target compounds as estimated (J) and non-detected target compounds as approximated (UJ).
- d. If the Percent Recovery is less than 10% for any of the pesticide target compounds in the Florisil Cartridge Performance Check, qualify detected compounds as estimated (J) and qualify non-detected target compounds as unusable (R).
- e. If the Percent Recovery of 2,4,5-trichlorophenol in the Florisil Cartridge Performance Check is greater than or equal to 5%, use professional judgment to qualify detected and non-detected target compounds, considering interference on the sample chromatogram.

Note: State in the Data Review Narrative potential effects on the sample data resulting from the Florisil Cartridge Performance Check analysis not yielding acceptable results.

Note: No information for florisil cartridge performance check included in data package. No qualification of the data performed, professional judgment.

DATA REVIEW WORKSHEETS

All criteria were met _____
Criteria were not met _____
and/or see below ___N/A___

GEL PERMEATION CHROMATOGRAPHY (GPC) PERFORMANCE CHECK

NOTE: GPC cleanup is mandatory for all soil samples.

If GPC criteria are not met, examine the raw data for the presence of high molecular weight contaminants; examine subsequent sample data for unusual peaks; and use professional judgment in qualifying the data. Notify the Contract Laboratory Program Project Officer (CLP PO) if the laboratory chooses to analyze samples under unacceptable GPC criteria.

Action:

- a. If the Percent Recovery is less than 10% for the pesticide compounds and surrogates during the GPC calibration check, the non-detected target compounds may be suspect, qualify detected compounds as estimated (J).
- b. If the Percent Recovery is less than 10% for the pesticide compounds and surrogates during the GPC calibration check, qualify all non-detected target compounds as unusable (R).
- c. If the Percent Recovery is greater than or equal to 10% and is less than 80% for any of the pesticide target compounds in the GPC calibration, qualify detected target compounds as estimated (J) and non-detected target compounds as approximated (UJ).
- d. If the Percent Recovery is greater than or equal to 80% and less than or equal to 120% for all the pesticide target compounds, no qualification of the data is necessary.
- e. If high recoveries (i.e., greater than 120%) were obtained for the pesticides and surrogates during the GPC calibration check, qualify detected compounds as estimated (J). Do not qualify non-detected target compounds.

Note: State in the Data Review Narrative potential effects on the sample data resulting from the GPC cleanup analyses not yielding acceptable results.

Note: No information for performance of GPC cleanup included in data package. No qualification of the data performed, professional judgment.

All criteria were met X
 Criteria were not met
 and/or see below

TARGET COMPOUND IDENTIFICATION

Criteria:

1. Is Retention Times (RTs) of both of the surrogates and reported target compounds in each sample within the calculated RT Windows on both columns? Yes? or No?
2. Is the Tetrachloro-m-xylene (TCX) RT ± 0.05 minutes of the Mean RT (RT) determined from the initial calibration and Decachlorobiphenyl (DCB) within ± 0.10 minutes of the RT determined from the initial calibration? Yes? or No?
3. Is the Percent Difference (%D) for the detected mean concentrations of a pesticide target compound between the two Gas Chromatograph (GC) columns within the inclusive range of ± 25.0 %? Yes? or No?
4. When no analytes are identified in a sample; are the chromatograms from the analyses of the sample extract and the low-point standard of the initial calibration associated with those analyses on the same scaling factor? Yes? or No?
5. Does the chromatograms display the Single Component Pesticides (SCPs) detected in the sample and the largest peak of any multi-component analyte detected in the sample at less than full scale. Yes? or No?
6. If an extract is diluted; does the chromatogram display SCPs peaks between 10-100% of full scale, and multi-component analytes between 25-100% of full scale? Yes? or No?
7. For any sample; does the baseline of the chromatogram return to below 50% of full scale before the elution time of alpha-BHC, and also return to below 25% of full scale after the elution time of alpha-BHC and before the elution time of DCB? Yes? or No?
8. If a chromatogram is replotted electronically to meet these requirements; is the scaling factor used displayed on the chromatogram, and both the initial chromatogram and the replotted chromatogram submitted in the data package. Yes? or No?

Action:

- a. If the qualitative criteria for both columns were not met, all target compounds that are reported as detected should be considered non-detected.
- b. Use professional judgment to assign an appropriate quantitation limit using the following guidance:
 - i. If the detected target compound peak was sufficiently outside the pesticide RT Window, the reported values may be a false positive and should be replaced with the sample Contract Required Quantitation Limits (CRQL) value.

DATA REVIEW WORKSHEETS

- ii. If the detected target compound peak poses an interference with potential detection of another target peak, the reported value should be considered and qualified as unusable (R).
- c. If the data reviewer identifies a peak in both GC column analyses that falls within the appropriate RT Windows, but was reported as a non-detect, the compound may be a false negative. Use professional judgment to decide if the compound should be included.

Note: State in the Data Review Narrative all conclusions made regarding target compound identification.

- d. If the Toxaphene peak RT windows determined from the calibration overlap with SCPs or chromatographic interferences, use professional judgment to qualify the data.
- e. If target compounds were detected on both GC columns, and the Percent Difference between the two results is greater than 25.0%, consider the potential for coelution and use professional judgment to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, use professional judgment to determine how best to report, and if necessary, qualify the data according to these guidelines.
- f. If Toxaphene exhibits a marginal pattern-matching quality, use professional judgment to establish whether the differences are due to environmental "weathering" (i.e., degradation of the earlier eluting peaks relative to the later eluting peaks). If the presence of Toxaphene is strongly suggested, report results as presumptively present (N).

GAS CHROMATOGRAPH/MASS SPECTROMETER (GC/MS) CONFIRMATION

NOTE: This confirmation is not usually provided by the laboratory. In cases where it is provided, use professional judgment to determine if data qualified with "C" can be salvaged if it was previously qualified as unusable (R).

Action:

- a. If the quantitative criteria for both columns were met (≥ 5.0 ng/ μ L for SCPs and ≥ 125 ng/ μ L for Toxaphene), determine whether GC/MS confirmation was performed. If it was performed, qualify the data using the following guidance:
 - i. If GC/MS confirmation was not required because the quantitative criteria for both columns was not met, but it was still performed, use professional judgment when evaluating the data to decide whether the detect should be qualified with "C".
 - ii. If GC/MS confirmation was performed, but unsuccessful for a target compound detected by GC/ECD analysis, qualify those detects as "X".

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLS)

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

op91903-bs1 beta-BHC RF = 0.582

$$\begin{aligned} [] &= (70303658)(50)/(233.3E6)(0.582) \\ &= 25.89 \text{ ppb} \quad \text{Ok} \end{aligned}$$

Action:

- If sample quantitation is different from the reported value, qualify result as unusable (R).
- When a sample is analyzed at more than one dilution, the lowest CRQLs are used unless a QC exceedance dictates the use of the higher CRQLs from the diluted sample.
- Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original reporting form and substituting the data from the diluted sample.
- Results between the MDL and CRQL should be qualified as estimated (J).
- Results less than the MDL should be reported at the CRQL and qualified (U). MDLs themselves are not reported.
- For non-aqueous samples, if the percent moisture is less than 70.0%, no qualification of the data is necessary. If the percent moisture is greater than or equal to 70.0% and less than 90.0%, qualify detects as estimated (J) and non-detects as approximated (UJ). If the percent moisture is greater than or equal to 90.0%, qualify detects as estimated (J) and non-detects as unusable (R) (see Table).

Percent Moisture Actions for Pesticide Analysis for Non-Aqueous Samples

Criteria	Action	
	Detected Associated Compounds	Non-detected Associated Compounds
% Moisture < 70.0	No qualification	
70.0 < % Moisture < 90.0	J	UJ
% Moisture > 90.0	J	R

DATA REVIEW WORKSHEETS

List samples which have $\leq 50\%$ solids

Note: If any discrepancies are found, the Region's designated representative may contact the laboratory to obtain additional information that could resolve any differences. If a discrepancy remains unresolved, the reviewer must use professional judgment to decide which value is the most accurate. Under these circumstances, the reviewer may determine that qualification of data is warranted. Note in the Data Review Narrative a description of the reasons for data qualification and the qualification that is applied to the data.

Dilution performed

[illegible]

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

FIELD DUPLICATE PRECISION

NOTE: In the absence of QAPP guidance for validating data from field duplicates, the following action will be taken.

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples. Identify which samples within the data package are field duplicates. Estimate the relative percent difference (RPD) between the values for each compound. If large RPDs (> 50%) is observed, confirm identification of samples and note difference in the executive summary.

Sample IDs: JC15518-5/-6_(S-35/S-35D) Matrix: Groundwater

COMPOUND	SQL ug/L	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
RPD within the required criteria of < 50 %.					

Actions:

a. Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

b. If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

- i. If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).
- ii. If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.
- iii. If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.
- iv. If both sample and duplicate results are not detected, no action is needed.

DATA REVIEW WORKSHEETS

OVERALL ASSESSMENT OF DATA

Action:

1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the Quality Control (QC) criteria previously discussed.
2. Write a brief narrative to give the user an indication of the analytical limitations of the data.

Note: The Contract Laboratory Program Project Officer (CLP PO) must be informed if any inconsistency of the data with the Sample Delivery Group (SDG) Narrative. If sufficient information on the intended use and required quality of the data is available, the reviewer should include their assessment of the usability of the data within the given context. This may be used as part of a formal Data Quality Assessment (DQA).

Overall assessment of the data: Results are valid; the data can be used for decision making purposes.